

CLAIMS

What is claimed is:

1 1. A latching system for a pivoting window sash having a pivoting end
2 and a non-pivoting end, said system comprising:
3 an upper latch member disposed near the non-pivoting end of the
4 window sash;
5 an anti-bow latch member disposed between the pivoting end of the
6 window and said upper latch member; and
7 an activating member operationally connected to said upper latch
8 member and said anti-bow latch member for operating both said
9 upper latch member and said anti-bow latch member.

1 2. The latching system of claim 1 for a pivoting window further having
2 a sash rail and a sash stile, wherein said upper latch member is at least
3 partially disposed within the sash rail, and wherein said anti-bow latch
4 member is at least partially disposed within the sash stile, and wherein said
5 operating includes retracting said upper latch member and said anti-bow latch
6 member at, or nearly at, the same time.

1 3. The latching system of claim 1, wherein said activating member is
2 mounted to the window sash.

1 4. The latching system of claim 1, wherein both said upper latch
2 member and said anti-bow latch member are individually engageable with a
3 slide channel within a window frame.

1 5. The latching system of claim 1, further comprising an operating
2 mechanism, wherein said activating member is connected to one or both of
3 said upper latch member and said anti-bow latch member via said operating
4 mechanism.

1 6. The latching system of claim 5, wherein said operating mechanism
2 comprises:

3 a horizontal linking member connected to said activating member and
4 also connected to said upper latch member; and
5 a vertical linking member connected to said anti-bow latch member and
6 also connected to one or both of said horizontal linking member
7 and said upper latch member.

1 7. The latching system of claim 6, wherein vertical linking member
2 includes a rotating gear, wherein said horizontal linking member has a toothed
3 rack portion for engagement with said gear.

1 8. The latching system of claim 5, wherein said operating mechanism
2 includes:
3 a horizontal linking member connected to said upper latch member;
4 and
5 a vertical linking member connected to said anti-bow latch member and
6 also connected to one or both of said horizontal linking member
7 and said upper latch member, wherein
8 said activating member includes a rotating cam connected to said
9 horizontal linking member.

1 9. The latching system of claim 8, wherein said horizontal linking
2 member includes an elastically-loaded piston rod.

1 10. The latching system of claim 8, wherein said horizontal linking
2 member includes a retractable cable, and wherein said rotating cam includes
3 a means for winding said retractable cable around said rotating cam, and
4 further wherein said operating mechanism further comprises a spring-loaded
5 means for extending said retractable cable.

1 11. The latching system of claim 8, wherein said horizontal linking

2 member has a toothed rack portion, and wherein vertical linking member
3 includes:
4 a gear shaft engaged with said geared rack portion ; and
5 a tooth lower member disposed in the sash stile, wherein said toothed
6 lower member is engaged with said gear shaft and is connected
7 to said anti-bow latch member.

1 12. The latching system of claim 8, wherein said vertical linking
2 member includes a rolling member disposed in the sash stile.

1 13. The latching system of claim 8, wherein said vertical linking
2 member includes a pivoting component disposed in the sash stile and
3 connected to said anti-bow latch member.

1 14. The latching system of claim 5, wherein said operating mechanism
2 comprises a flexible tape-like member disposed in an L-shaped slot and
3 connected to said activating member.

1 15. The latching system of claim 5, wherein said operating mechanism
2 comprises:
3 a retractable cable connected to said anti-bow latch member; and
4 at least one pulley disposed in the sash stile, and wherein
5 said activating member includes a rotating cam, and further wherein
6 said retractable cable is directed by said pulley and is connected to
7 said rotating cam, and still further wherein
8 said rotating cam contains a means for winding said retractable cable
9 around said rotating cam, and even further wherein
10 said operating mechanism includes a means for extending said
11 retractable cable.

1 17. A latching system for a pivoting window sash having a vertical
2 sash rail and a horizontal sash stile, said system comprising:

3 an upper latch member at least partially disposed within the sash rail
4 and extendable through an opening in the sash stile for
5 engaging a slide channel within a window frame;
6 an anti-bow latch member at least partially disposed within the sash
7 stile and extendable through an opening in the sash stile for
8 engagement with the slide channel;
9 an activating member disposed one or both of the sash rail and the
10 sash stile; and
11 an operating mechanism for connecting said activating member with
12 said upper latch member and said anti-bow latch member,
13 wherein
14 actuating said activating member disengages both said upper latch
15 member and said anti-bow latch member from the slide channel
16 via said operating mechanism, thereby allowing the window
17 sash to be tilted.

1 18. The latching system of claim 17, wherein said operating
2 mechanism includes:
3 a horizontal linking member at least partially disposed in the sash rail
4 and connected to said upper latch member and also connected
5 to said activating member; and
6 a vertical linking member at least partially disposed in the sash stile
7 and connected to said anti-bow latch member and also
8 connected to one or more of said activating member, said
9 horizontal linking member, and said upper latch member.

1 19. The latching system of claim 17, wherein further actuating said
2 activating member engages both said upper latch member and said anti-bow
3 latch member with the slide channel via said operating mechanism, thereby
4 fixing the window sash in a non-tilted position.

1 20. A latching system for a window including:

2 a pivoting window sash having a first side; a second side; and a
3 pivoting end; and
4 a window frame having a first slide channel and a second slide
5 channel, said system comprising:
6 a first upper latch member disposed on the first side of the window for
7 engaging the first slide channel;
8 a second upper latch member disposed on the second side of the
9 window for engaging the second slide channel;
10 a first anti-bow latch member disposed on the first side of the window
11 between said first upper latch member and said pivoting end for
12 engaging the first slide channel;
13 a second anti-bow latch member disposed on the second side of the
14 window between said second upper latch member and said
15 pivoting end for engaging the second slide channel;
16 an activating member disposed on the window;
17 a first horizontal linking member for operationally connecting said
18 activating member with said first upper latch member;
19 a first vertical linking member for operationally connecting said
20 activating member with said first anti-bow latch member,
21 wherein
22 actuating said activating member disengages said first upper latch
23 member and said first anti-bow latch member from the first slide
24 channel.

1 21. The latching system of claim 20, further comprising:
2 a second activating member;
3 a second horizontal linking member for operationally connecting said
4 second activating member with said second upper latch
5 member; and
6 a second vertical linking member for operationally connecting said
7 second activating member with said second anti-bow latch
8 member, wherein

9 actuating said second activating member disengages said second
10 upper latch member and said second anti-bow latch member
11 from the second slide channel.

1 22. The latching system of claim 20, further comprising:
2 a second horizontal linking member for operationally connecting said
3 activating member with said second upper latch member;
4 a second vertical linking member for operationally connecting said
5 activating member with said second anti-bow latch member,
6 wherein
7 actuating said activating member also disengages said second upper
8 latch member and said second anti-bow latch member from the
9 second slide channel.

1 23. The latching system of claim 22, wherein
2 said first vertical linking member is operationally connected to said
3 activating member via said first horizontal linking member; and
4 further wherein
5 said second vertical linking member is operationally connected to said
6 activating member via said second horizontal linking member.

1 24. The latching system of claim 20, wherein said first vertical linking
2 member is operationally connected to said activating member via said first
3 horizontal linking member.

4 25. A latching system for a pivoting window sash having a pivoting
5 end, a non-pivoting end, and a sash rail, said system comprising:
6 a first upper latch member disposed on a first side of the window near
7 the non-pivoting end for engaging a first slide channel within a
8 window frame;

9 a second upper latch member disposed on a second side of the
10 window near the non-pivoting end for engaging a second slide
11 channel within the window frame;
12 a first anti-bow latch member disposed on the first side of the window
13 between the pivoting end and the first upper latch member for
14 engaging the first slide channel;
15 a second anti-bow latch member disposed on the second side of the
16 window between the pivoting end and the second upper latch
17 member for engaging the second slide channel;
18 a single activating member centrally disposed on the sash rail;
19 a first horizontal linking member for connecting said activating member
20 with said first upper latch member;
21 a second horizontal linking member for connecting said activating
22 member with said second upper latch member;
23 a first vertical linking member for connecting said first horizontal linking
24 member with said first anti-bow latch member; and
25 a second vertical linking member for connecting said second horizontal
26 linking member with said second anti-bow latch member;
27 wherein
28 actuating said activating member disengages said first upper latch
29 member and said first anti-bow latch member from the first slide
30 channel and also disengages said second upper latch member
31 and said second anti-bow latch member from the second slide
32 channel, thereby allowing the window sash to be tilted.

1 26. The latching system of claim 25, wherein actuating said activating
2 member disengages all of said latch members simultaneously or nearly
3 simultaneously.

1 27. A latching system for a pivoting window sash having a pivoting
2 end, a non-pivoting end, and a sash rail, said system comprising:

3 a first upper latch member disposed on a first side of the window near
4 the non-pivoting end for engaging a first slide channel within a
5 window frame;
6 a second upper latch member disposed on a second side of the
7 window near the non-pivoting end for engaging a second slide
8 channel within the window frame;
9 a first anti-bow latch member disposed on the first side of the window
10 between the pivoting end and the first upper latch member for
11 engaging the first slide channel;
12 a second anti-bow latch member disposed on the second side of the
13 window between the pivoting end and the second upper latch
14 member for engaging the second slide channel;
15 a first activating member disposed on the sash rail toward said first
16 side of the window and connected to said first upper latch
17 member;
18 a second activating member disposed on the sash rail toward said
19 second side of the window and connected to said second upper
20 latch member;
21 a first vertical linking member for connecting said first activating
22 member with said first anti-bow latch member; and
23 a second vertical linking member for connecting said second activating
24 member with said second anti-bow latch member, wherein
25 actuating said first activating member disengages said first upper latch
26 member and said first anti-bow latch member from the first slide
27 channel, and wherein
28 actuating said second activating member disengages said second
29 upper latch member and said second anti-bow latch member
30 from the first slide channel.